

**CANADIAN ECONOMIC DEVELOPMENT IN THE WHEAT BOOM ERA:  
A REASSESSMENT**

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One of the outstanding facts of Canadian economic history is that the period from 1896 to the outbreak of World War I encompassed the most rapid growth of real output that the Canadian economy ever experienced. It was also a period of great structural transformation. A fully transcontinental economy was fleshed out, there was a dramatic growth of cities, and manufacturing industry both expanded rapidly and diversified. This was indeed a defining period in the development of the Canadian economy. In an almost universally accepted interpretation, this stellar development is associated with the settlement of the plains of western Canada and the emergence there of a great export economy based on wheat. We have become accustomed to calling this the “Wheat Boom Era”.

There can be little quarrel with the basic facts of growth and transformation. The Canadian economy did indeed grow over the 1896 to 1913 period at a remarkably rapid pace and there was indeed a substantial transformation of the structure of the economy. What I want to call into question is the causal association of this development with the process of settlement on the plains and the construction of the “Wheat Economy”. This paper is in two parts. In the first part I shall argue, on the basis of recently available evidence, that the period of most rapid growth of

real per capita income came too early to be accounted for by the Wheat Boom. Indeed, there was a Wheat Boom but it mainly came later and over a shorter span of time than is usually supposed. The economy was growing at its most rapid pace for a decade before the effects of settlement on the plains could have had much effect on the economy at large. A valid reading of Canadian economic development in this period requires an alternative explanation. In the second part of the paper I offer a preliminary sketch of the main elements of such an alternative.

## I.

It has long been recognized that the Canadian economy grew with unusual rapidity from 1896 up to the outbreak of World War I in 1914. That has been reconfirmed by the recent re-estimation of Canadian output growth in the years prior to 1926 (Urquhart, 1993).<sup>1</sup> Between 1897 and 1913 the rate of growth of real per capita GNP averaged a vigorous 3.60 per cent per annum.<sup>2</sup> This occurred at a time when population growth was also very rapid, at 2.52 per cent per annum. Aggregate GNP was growing at 6.21 per cent. The Canadian economy has never grown more vigorously. In a full treatment of this experience the growth of population should

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<sup>1</sup> The present reinterpretation of Canadian development is very largely an outgrowth of the project, headed by Malcolm Urquhart, to produce a reliable national income series for Canada for the years prior to 1926. As a participant in that project I next turned to the question of what new light the Urquhart national income statistics threw upon our understanding of early Canadian economic development. The paper presented here is drawn from a broader reinterpretation of the topic but represents the most strongly revisionist part of my general argument.

<sup>2</sup> It is customary to refer to the remarkable growth period that we designate the Wheat Boom era as 1896 to 1913. The upturn after several years of severe depression in the economy began in late 1896 but, overall, that year was the low point of the entire decade. Some part of the rapid growth thereafter would really have been just recovery from the depression. This is not the place to get into the complicated issue of separating cyclical movement from trend but if one were to project the trend of per capita income growth from 1870 through 1895, the better part of the recovery would be seen to have been attained by 1897. Consequently, the overall growth period considered in this paper is 1897 to 1913. Some might argue that the economy had already reached a cyclical peak in 1912 (certainly there was very little further growth of per capita GNP to 1913), in which case the growth rates reported here are slight understatements.

surely be considered as endogenous. For present purposes, though, I shall focus on real per capita income growth as the matter to be explained. At least one of the important things we want to know about this period of Canadian development is how it was that the rate of per capita income growth could have been so high.

The received explanation of Canadian economic growth in the 1896 - 1913 period has been long established and almost universally agreed upon. The settlement of the western plains to produce a great wheat export economy is widely claimed to be the driving force behind the performance of the Canadian economy. That is the way the story was told by Skelton as early as 1913.<sup>3</sup> Mackintosh (1923, 1939) made it a central feature of Canadian economic history, and it was given further prominence by Buckley (1955), Fowke (1957), and in textbook form by Easterbrook and Aitken (1956). This same account has persisted despite a concerted assault by Chambers and Gordon (1966). That team raised the first serious challenge to the primacy of the Wheat Boom as the explanation of Canada's rapid development in this period, and they did it by launching an all out attack. Using a simple two sector general equilibrium model of an open economy, they analytically reduced the contribution of the export staple wheat to the growth of per capita GNP to consist merely of the increase of rent on land in the prairie region and they assembled data to suggest that the increment to land rent would have contributed at most only 8.4 per cent of the observed growth of per capita income over the 1901 - 1913 intercensal decade

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<sup>3</sup> The main outlines of the conventional story were ably set forth by O.D. Skelton (1913) writing in the conglomerate history **Canada and its Provinces** contemporaneously with the settlement of the prairie west. One might wonder how Skelton could have been so perceptive to have known that the rapid development of the Canadian economy was a consequence of western settlement. Part of the answer is that he was writing about the time of peak excitement about the emergence of the wheat economy. Another reason is that development had been expected to proceed in that way. That was the way the story was supposed to unfold.

which is supposed to have encompassed the main period of growth. Thus, concluded Chambers and Gordon, with a note of stridency, scarcely any of Canadian per capita income growth in the so-called Wheat Boom era can properly be attributed to wheat. The counter attack was quick and forceful. Several authors (notably Caves, 1971; Bertram, 1973; Lewis, 1975) objected to both the theoretical formulation employed by Chambers and Gordon and, especially, to their empirical evaluation of the contribution of the wheat staple to growth. Successive re-estimations of the contribution of the wheat economy, made largely in the same vein as Chambers and Gordon, raised the place of wheat to considerably greater prominence. There, by and large, the issue has rested. Recent textbook writers seem pretty much content with the long established story. Canada grew with exceptional rapidity because, with improvements in transport and in the technology of producing wheat on semi-arid land, a large area of land in the Canadian west could be exploited for export to the world market. Immigrants flowed in to take advantage of the opportunity. The economy was substantially enlarged and in the process, with all the secondary effects that flowed from western settlement, the whole economy prospered.<sup>4</sup>

The recent provision of an annual, solidly based historical national income series for Canada (Urquhart, 1993) clarifies and considerably illuminates the quantitative dimensions of Canadian economic development over the Wheat Boom period. The argument I put forward in this paper is that a careful examination of the new data series forces us again to question the paramount role

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<sup>4</sup> The story takes on an even grander stature in the version of the staples account of Canadian economic development put forward by Mackintosh (1923, 1939). In his conception, Canada was limited to simple natural resource exploitation for export to metropolitan markets over the whole of its history up until a staples episode of sufficient dimensions occurred such that the economy got transformed once and for all into a modern industrial economy. That was accomplished by the Wheat Boom. By that account the Wheat Boom marks a kind of watershed, a Great Transition in the nature of the Canadian economy.

of western settlement and the Wheat Boom, especially as determinants of real per capita income growth. There is no question that the economy grew very rapidly. What has to be questioned is the explanatory role of the wheat staple. There are two good reasons for calling into question the received story. First, and perhaps most importantly, the timing does not fit well. Second, the proximate sources of the growth in aggregate output are largely to be found in things that had little to do with wheat and western settlement.

#### FIGURE 1 UNDER REVISION

The growth of real per capita income in Canada, over the entire period 1870 to 1994, is shown in Figure 1. The upper panel of the graph situates the episode focused on here within the longer span of Canadian economic growth. The lower panel of the graph focuses on the same data over a shorter period — 1891 to 1926 — spanning the classic Wheat Boom years of 1897 to 1913, and allows one to see in more detail the particular features of the movement from 1897 to 1913. This figure provides the primary evidence with which my argument begins. Viewed in the context of the entire span of Canadian history for which we have data, the Wheat Boom era encompassed the most rapid growth of real per capita income over an extended period that the Canadian economy has experienced.<sup>5</sup> That much has long been recognized. What has not received the attention it deserves, because we have not previously had the statistics to show it, is the pattern of change within the 1897 to 1913 period. The most rapid growth came in the first ten years of

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<sup>5</sup> The average annual rate of real per capita income growth over the years 1897 through 1913, calculated as the coefficient on time of a log linear regression, was 3.40 (a bit lower than would be derived from the average growth rate between terminal years and also lower than the more frequently quoted figure for 1896-1913 of 3.97 which includes a large element of cyclical recovery between 1896 and 1897). Over the entire period from 1870 through 1994 Canadian real per capita income grew at an average annual rate of 2.09 percent. Over the period of sustained and vigorous growth from 1951 to 1981 it grew by 2.69 per cent.

the period. That is seen fairly clearly in Figure 2 in which the annual observations for 1897 through 1913 are shown in relation to a simple logarithmically linear trend line. Growth was especially rapid until 1906. It faltered a bit in 1904, surged upward to 1906 and then tapered off noticeably in 1907. In the following year income fell by 8 per cent in the most serious recession in more than a decade.<sup>6</sup> From 1897 through 1907 the average rate of growth was 4.41 per cent per annum, from 1907 through 1913 it was 2.27 per cent. The former is certainly outstandingly vigorous growth, the latter is substantial but not much above the long term average for the economy. Over the whole 1897 to 1913 period real per capita income almost doubled. Three quarters of that gain had been achieved by 1907. If an explanation is sought for unusually rapid growth, it is the growth in the first decade of the traditional Wheat Boom era that is most in need of attention. The argument of this paper emphasizes that the traditional Wheat Boom era divides importantly into two phases, before and after 1907, and it is the extraordinary growth of the first period that needs to be accounted for.

The central issue is whether western settlement and the development of the wheat economy, and the secondary effects that had throughout the economy, proceeded continuously throughout the 1897 to 1913 period, or as is argued here, was concentrated largely in the later phase when per capita income growth was lower. Surprisingly little attention has been paid to the detailed annual movement of the western economy during the settlement period. Most writers have simply taken the whole experience as a single episode. The main difficulty is to find an

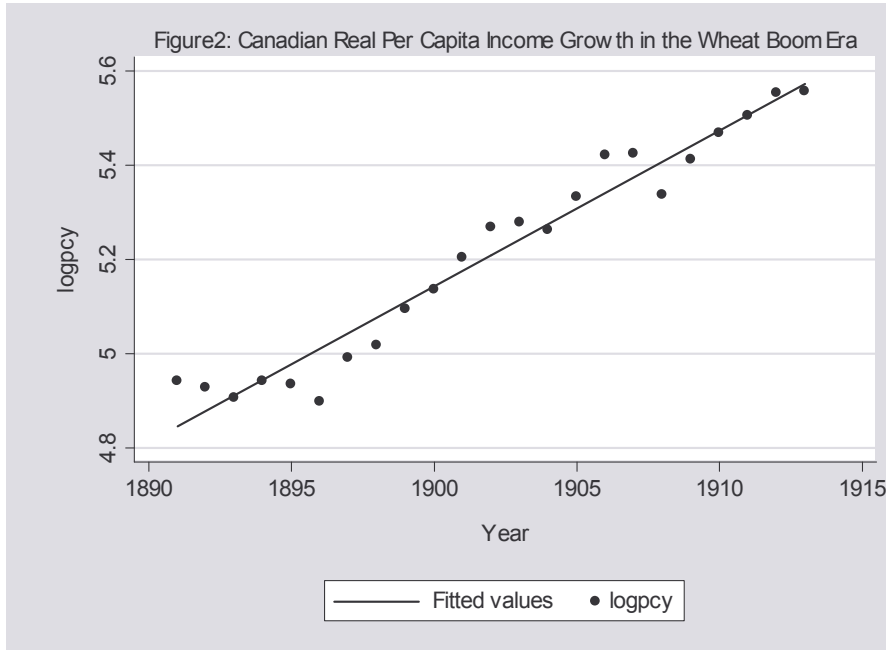
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<sup>6</sup> In the business cycle chronology of Chambers (1964) the peak was reached in May 1907 and the depression bottomed out in June 1908. This very decided depression was much more than just an interruption in growth, but it was short-lived.

appropriate indicator of the time pattern of development of the wheat economy.

**Figure 2: Canadian Real Per Capita Income Growth in the Wheat Boom Era**

**FIGURE II UNDER REVISION**



Three indicators that have commonly been used are homestead entries, wheat acreage and immigration.<sup>7</sup> All are relevant to the situation but all have their limitations. I shall nevertheless

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<sup>7</sup> Population change would be a straightforward indicator but is not available on an annual basis. One can look at the change in population between quinquennial census dates since censuses were taken every five years in the prairie provinces because of the rapid growth of population. Nevertheless, no one has yet produced an annual series of population estimates in this period, at the provincial level. An unexploited possibility that has not been pursued here would be to exploit postal data. Simply the number of post offices, most of which were small local offices in rural areas, but also measures of activity at those offices, might offer a useful way of looking at the dynamics of the settlement process.

use all three to attempt to capture the time pattern of development of the wheat economy on the Canadian plains.

The taking up of land was the earliest indication of settlement. Land upon which to grow wheat for export was the big attraction of western Canada and much of the land was virtually free in the form of homesteads. The record of homestead entries has commonly been used as the index of prairie settlement. The data are readily available but are not without their limitations. Much land was also purchased, either from railways and land companies or from the government, and in total, more purchased than homestead land was ultimately brought under cultivation.<sup>8</sup> Many homesteads were filed and later abandoned. Some individual parcels of land were filed several times. New homestead entries might be a leading indicator of the pace of settlement but the more pertinent indicator may be homestead claims net of cancellations. Broadly the two indicators show the same pattern but there are some notable differences in details.<sup>9</sup> The series on homestead entries are graphed in Figure 3. By the mid 1890s homestead entries had fallen to a low level. Settlers were not snapping up free land in the Canadian west. Entries net of cancellations reached an all time low level in 1897. Thereafter the series rises substantially to 1901, but still at a modest level. Then the situation changed dramatically. A big

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<sup>8</sup> Buckley (1955, p. 18). We have a record of annual sales of land by the railways, by the Hudson's Bay Company and of school lands sold by the government. The last two categories may have mostly consisted of sales directly to prospective farmers but railway lands were the larger part of the overall total and much of the sales of railway lands went in blocks to land companies and other speculative investors. That seriously distorts the time pattern of land sales and renders it a poor indicator of settlement timing.

<sup>9</sup> In the late years of the nineteenth century cancellations were offsetting new entries to a large extent and, indeed, in 1897 net entries dropped almost to zero. The big jump early in the century occurred at the same time in both series but new entries dropped a lot less than cancellations in the pause in the process that occurred in 1907. In the main, however, the primary story is not affected by the difference between new homestead entries and net entries.



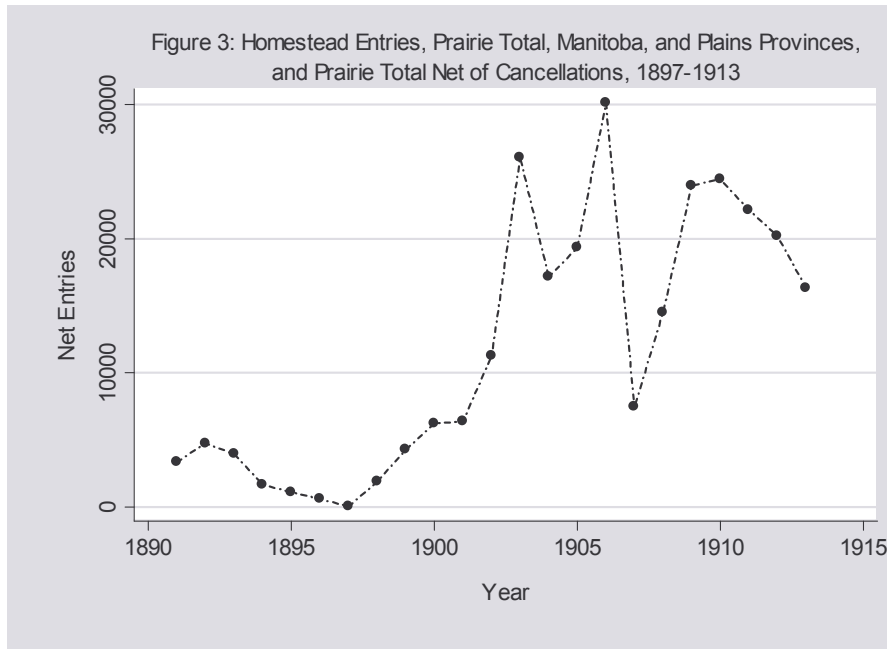
jump in homestead entries came in 1903.<sup>10</sup> There was considerable year to year fluctuation but from 1903 onward it was around a level of about 20 thousand per year. Prior to 1902 the level had been at about three to four thousand per year. The earliest indication of the Wheat Boom was the pronounced jump in net entries of homesteads in 1903. The sustained level of homesteading thereafter characterized the successful settlement of the plains region.<sup>11</sup> It is pertinent to keep in mind the distinction between the prairie provinces and the plains region that comprised Alberta and Saskatchewan and only a small part of western Manitoba. Most of Manitoba had been settled prior to 1896.

**Figure 3: Homestead Entries, Prairie Total, Manitoba, and Plains Provinces, and Prairie Total Net of Cancellations, 1897 - 1913**

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<sup>10</sup> In relative terms the jump in sales of railway land in that year was even greater. Much railway land, however, was sold not directly to farmers but to land companies.

<sup>11</sup> By far the greater part of the increase came in Saskatchewan and Alberta. Only gross entries are available by province but homestead entries in Manitoba rose from about one thousand per year to from two to three thousand. In the plains provinces the rise was from a level of three or four thousand to 25 to 30 thousand.

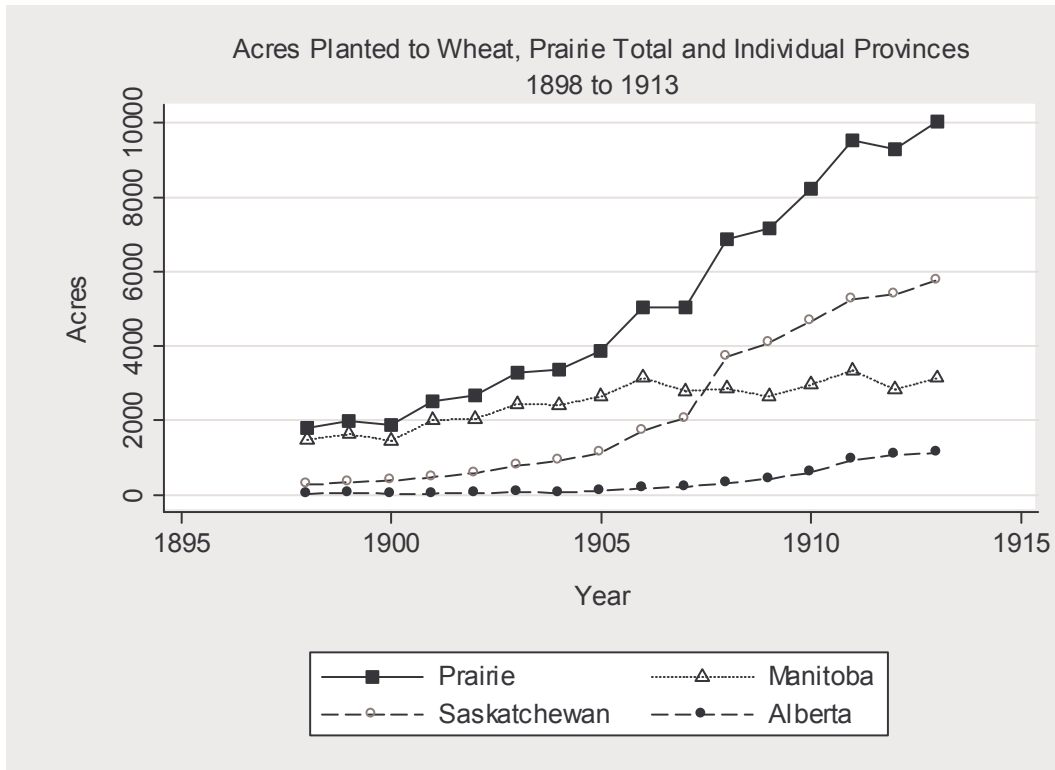


Census data on farm development are available only at five year intervals but there are annual statistics of acreage planted to wheat, the leading crop. These are available for the whole prairie region from 1898 onward and are graphed in Figure 4. While wheat acreage was rising continuously from 1900 onward, the really rapid rise began in 1905 at the earliest and most prominently from 1907. A second important point is emphasized by Figure 4. Manitoba was already a significant wheat producing region. It was Manitoba that established the Canadian west as a force in world export markets for wheat and until about 1905 western Canadian wheat was largely Manitoba wheat. The surge of settlement into Saskatchewan after 1902 shows up as a sharp upturn in Saskatchewan wheat acreage after 1905. By 1908 the true Wheat Boom was well underway and Saskatchewan passed Manitoba in wheat acreage. At the beginning of the century what we are observing is the coming to fruition of an export wheat producing economy in Manitoba that had been settled as much as a generation earlier. The main rush of settlement onto the western plains and the emergence of a wheat economy came primarily in the 1907 to

1913 period.

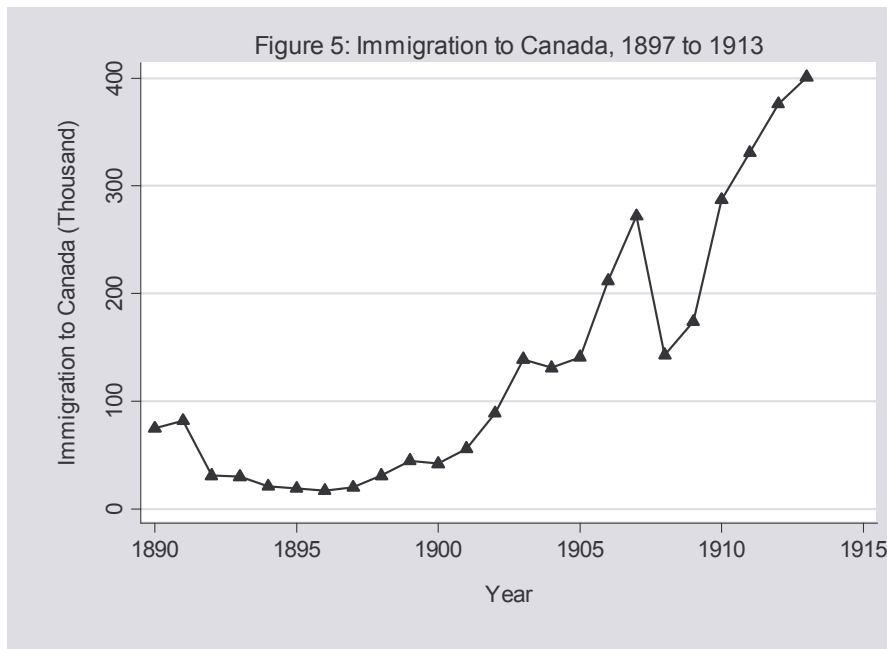
The massive flow of immigration into Canada in the Wheat Boom era is commonly associated either directly or indirectly with western settlement as well. The story here is well known but is recapitulated in Figure 5. In the 1890s immigration to Canada had been running at a modest 20 thousand per year but began to move upward after 1897. A first big jump came in 1903 and then, after 1905, immigration moved up above the 200,000 level, a ten fold increase over what it had been a decade earlier. Apart from a sharp set-back in the depression year 1908, immigration continued at a very high and even rising level right up to World War I. Again, the point to be emphasized is that the really massive immigration came in the second phase of western settlement, in the 1907 to 1913 period. In that respect all three commonly used indicators of the development of the wheat economy are in close accord. Around the beginning of the century development was at a relatively modest level and slow getting underway. The changes we most associate with the Wheat Boom came in the later and shorter period.

**Figure 4: Acres Planted to Wheat, Prairie Total and Individual Provinces, 1898 to 1913**



The Wheat Boom has often been described as a great investment boom, involving large inflows of foreign capital. This was the massive amounts of capital required to build the railways, the grain collection facilities, the farmsteads, the whole structure of towns and cities in the wheat economy, and the production facilities for manufacturing induced by the settlement

**Figure 5: Immigration to Canada, 1897 to 1913**



boom. Investment did indeed rise rapidly and the ratio of investment to GNP reached all-time high levels. Foreign capital indeed flowed into the country in massive amounts. There is no intention here to question the basic record. It is clear enough. The question of interest is whether the investment boom was in fact induced directly or indirectly by western settlement. Here again attention can be directed to the two phases of development, before and after 1907. Both aggregate capital formation and the ratio of investment to GNP rose continuously over the entire 1898 to 1913 period.<sup>12</sup> There was no notable break in pattern around 1907. Proportionally, some of the biggest increases in investment came before 1907, before western settlement reached the sort of proportions that could be a strong inducement to investment. Other significant sources of investment demand in this early phase should be sought. In what is becoming increasingly

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<sup>12</sup> The data on capital formation and its components, like the data on GNP, are drawn from Urquhart (1993). In a paper already replete with graphs this series is not presented in a diagram. It should be easy enough to visualize an almost straight line sloping upward.

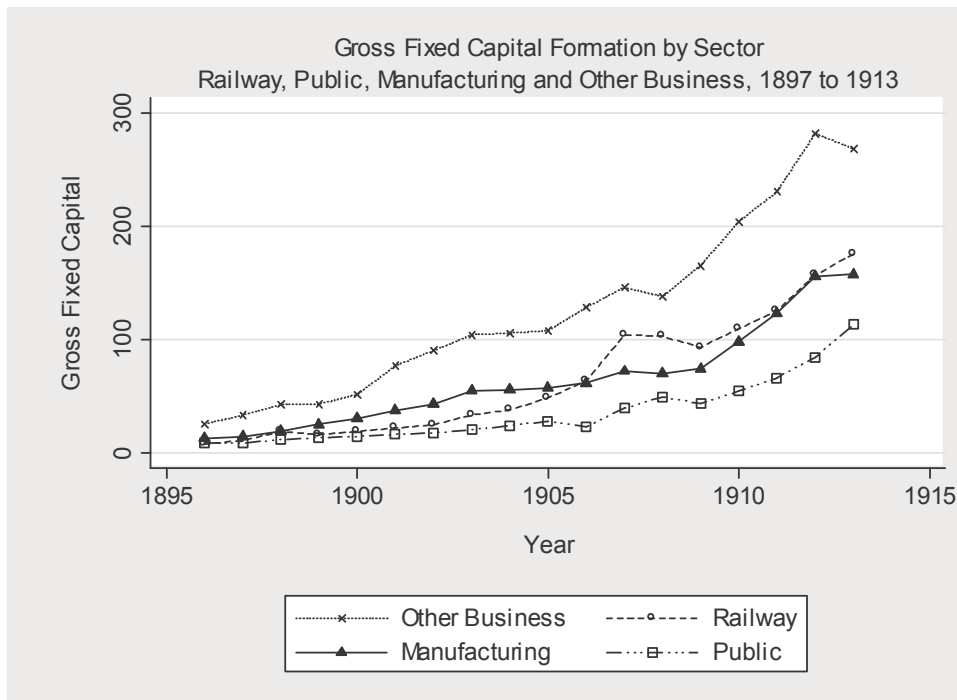
apparent as the true Wheat Boom period, 1907 to 1913, investment rose to remarkable heights. To a large extent that was a result of massive inflow of capital from abroad. Foreign capital inflow played little role in the early years of the investment boom. It took a sharp upward turn in 1904 and again in 1905, dropping back to earlier levels in the following two years. It was in 1908 and the years after that when foreign capital inflow soared. Unlike capital formation in the aggregate, then, capital inflow from abroad displays the two-phase pattern shown by the measures of western settlement.<sup>13</sup> The composition of investment is of some interest, however, and that is shown in Figure 6 which singles out four components of the aggregate investment series. All four components rise to great heights in the period after 1907. The increases then in railway and other transport investment and in public capital formation are especially prominent. In the earlier phase the larger increases were in manufacturing and in other business investment. The character of the investment boom evidently differed in its two phases.

So far it has been shown that, in the aggregate, the timing of rapid economic development in Canada and the timing of western settlement that is supposed to have precipitated it do not correspond in a way that would lead to a plausible causal link that ran from western settlement, through its secondary effects on the economy, to rapid growth of the whole economy. Instead,

**Figure 6: Gross Fixed Capital Formation by Sector, Railway, Public, Manufacturing and Other Business, 1897 to 1913**

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<sup>13</sup> The point is far from novel. Buckley (1955) pointed it out in his pioneering work on capital formation, indicating that it was something of an enigma that investment should have been rising forcefully so early in the development episode and that in its early years it was largely domestically financed.



the period of most rapid growth came in advance of the main surge of western settlement. The feverish spate of railway building, the heavy public investment in urban facilities, the really large influx of immigrants — things that are usually taken as indicative of the effects of the Wheat Boom — all came in the years after 1907. Two possible qualifications to the argument that is being presented here should be confronted. One is that the economy may have continued to grow in aggregate at a rapid pace through the entire 1897 to 1913 period, but that the large inflow of immigrants induced by prosperity in Canada lowered the rate of growth of per capita income in the latter half of the era.<sup>14</sup> It turns out, rather surprisingly, that in fact the rate of growth of total real GNP, in the 1907 to 1913, was barely one half that of the earlier period despite the more rapid increase in population. The argument presented here about two phases of

<sup>14</sup> Such an argument would run counter to a common theme in Canadian economic history which attributes an acceleration of per capita income growth to the more rapid growth of population after 1906, partly for reasons of economies of scale but also because of an increased ratio of labor force to population. That argument was emphasized by Caves (1971) and is also contained in the recent study by Green and Sparks (1999).

growth during the Wheat Boom era applies equally to aggregate as to per capita GNP.

A second qualification is that the rapid growth of the economy in the first phase might have been a consequence of developments made in anticipation of rapid settlement of the western plains. Investments in infrastructure and in manufacturing and distribution capacity might have been made in the expectation that the time was ripe for explosive growth in the wheat economy. Such an argument is not easy to test in any definitive way. There are several reasons, however, to question its plausibility. How far in advance of validation would one expect such speculative investment to be made? Per capita income was growing for at least six years, if not a full decade, before there were strong indications that western settlement was really booming. In one sense, though, Canadians had been anticipating a western settlement boom ever since the time of Confederation, when the vast territory that would become the prairie provinces was purchased. In the intervening years there had been many disappointments. Manitoba settlement had come in a great rush and the boom there collapsed in the early 1880s. The experience of that crash was very much in the minds of many Canadians. Railways had been built perpendicular to the main line in the Territories, yet little settlement followed them. Indeed, as has already been shown, it was only after settlement was well underway that the greater amount of railway construction was undertaken. Investment in general rose but did not shoot up in advance of the growth of output. It was only when sustained settlement on a large scale was manifest that investment climbed to unprecedented heights. There is little in all this to support the idea of strong development in anticipation of the Wheat Boom.



So far the argument has run in terms of aggregate measures. Another perspective can be obtained by looking at the component elements of national income growth to identify the proximate sources of rapid change. One can ask “where in the economy was the rapid growth of the 1897 to 1907 period to be found and was it in sectors that would be most closely affected by western settlement?” Identifying the proximate sources of growth may also help in pointing to alternative explanations of the development of the economy in this period. Table 1 summarizes the broad sectoral composition of change over the entire Wheat Boom era and in each of the two phases. The data are all average annual rates of growth over the intervals specified, except for the final column which gives the relative weight in 1907 of each sector in aggregate national product. As points of reference the first two lines give the growth rates of real GNP and real GNP per capita. The sectoral growth rates are all in current dollars since there is only an aggregate GNP deflator and little would be gained by dividing all sectoral growth rates by the same amount. For reference, however, the rates of increase in the price level and the growth rates of current dollar GNP are also given. Price change was not a major factor in the period under study. The price level rose at about two per cent per annum, with little difference between the earlier and later period.

Some of the sectors are very small and would not have much effect on the overall growth of the economy. Their growth pattern is shown here only for the interest it might generate. Commentary on the evidence of Table 1 focuses on the main, influential sectors. Most sectors of the economy grew at least as rapidly in the 1897 to 1907 period as in the later, “true” Wheat

Boom period. The only exceptions are fishing, which carried little weight, house rents, and the public sector. The principal point to be made is that the rapid growth of the first phase reflected a boom in manufacturing. Growth in mining was also fairly rapid, somewhat more so in the

**Table 1: Canadian Output Growth by Broad Sector of the Economy, 1897 to 1913**

	1897-1913	1897-1907	1907-1913	1907 weight
	(average annual rates of growth)			
Real GNP	6.2	6.8	3.4	--
Real GNP per capita	3.6	4.4	2.3	--
Price Level	2.2	2.3	2.0	--
Current Dollar GNP	8.5	9.2	7.4	--
Agriculture	6.5	6.6	6.5	20.52
Forestry	4.2	4.5	3.5	1.15
Fishing	3.1	1.7	4.0	0.73
Mining	8.8	9.6	7.5	2.86
Manufacturing <sup>a</sup>	7.8	9.0	4.3	21.18
Construction	15.0	17.1	11.7	5.28
Transport	11.2	11.4	10.9	6.30
Communications	17.7	21.6	11.5	0.48
Electrical Power	16.9	17.9	15.3	0.39
Banking and Finance	10.6	11.9	8.4	4.46
House Rent	8.9	8.6	9.4	5.60
Public Sector <sup>b</sup>	8.5	7.1	10.8	3.60

a. includes manufactured gas

b. an aggregation of federal, provincial and municipal public administration plus public education and universities

Not shown: hunting and trapping, wholesale and retail trade, and services

first period. If one were to divide mining between coal and other categories the latter would follow more closely the pattern of manufacturing. It is also rather interesting that the output of

the construction sector grew more rapidly between 1897 and 1907 than between 1907 and 1913, especially given the usual emphasis on the great surge of investment in infrastructure in the later period. It is also notable that agricultural output grew as rapidly in the first phase as in the “true” Wheat Boom. It might have been expected that agricultural output would have grown quite rapidly in the period when the wheat economy was becoming established and carrying a significant weight in the national economy. Agriculture was a large sector, heavily weighted by the established farm economy of eastern Canada. Growth of 6.6 per cent per annum in the 1897 to 1907 period is remarkably vigorous and could only have been achieved if the older farming areas were experiencing significant growth of output.

Given that the rapid growth of the 1897 to 1907 period was to a large extent an expansion of manufacturing industry, it is worth looking at manufacturing in more detail. Which subsectors were leading the growth? For that purpose Table 2 shows the average annual rates of growth over the entire 1897 to 1913 period, and in the two sub-periods, for 17 manufacturing industries. Again, the 1907 weights of each industry in the manufacturing total are shown in the fourth column of the table. Leading the pace of change was the iron and steel industry. This encompasses both primary steel production and fabricated steel products. By 1907 it had become the largest single component of manufacturing industry. Its remarkably rapid growth over the 1897 to 1907 period is the leading story in the whole picture. What it reflects is the emergence of a significant primary steel industry in Canada, a topic taken up in some detail in the next section of the paper. The non-ferrous metal industries also grew very rapidly in the first phase of the Wheat Boom era. This represents primarily the development of copper, nickel, lead and zinc

smelting and is closely associated with the rapid development of the mining industry in that same period. Given that railway expansion was greater in the later phase of development, and that the newly-established automobile industry was only getting underway towards the end of the period, it is rather surprising that transport equipment manufacturing should have grown much more rapidly between 1897 and 1907 than between 1907 and 1913. The technologically new industries, chemicals, electrical apparatus, also grew more rapidly in the earlier period.

**Table 2: Growth of Output in Manufacturing Sub-sectors, 1897 - 1913**

	1897-1913	1897-1907	1907-1913	1907 weight
	(average annual rates of growth)			
Food and beverages	5.1	5.3	4.8	12.56
Tobacco	5.6	3.8	8.7	1.47
Rubber products	11.4	9.7	10.3	0.81
Leather products	2.9	1.4	5.5	4.93
Textiles	3.4	4.0	2.4	3.37
Clothing	7.1	8.6	4.7	9.61
Lumber and wood products	5.4	9.5	- 1.2	16.78
Pulp and paper	8.3	10.7	4.4	2.44
Printing and publishing	6.7	5.3	9.0	3.05
Iron and steel and products	12.9	19.3	3.0	21.71
Transport equipment	12.8	15.4	8.6	8.08
Non-ferrous metal refining	12.3	18.4	2.7	5.56
Electrical apparatus	15.2	23.3	4.7	1.44
Non-metallic mineral products	10.7	10.7	10.8	3.16
Petroleum products	11.8	9.5	15.6	0.59
Chemicals	11.0	12.8	8.0	2.76
Miscellaneous manufacturing	6.1	8.6	2.1	1.69

The pulp and paper manufacturing industry, which was to grow to great dimensions in the years after World War I, also displayed an early period of rapid growth. Given the large weight of

flour milling in the industry, it is surprising that even food and beverages grew somewhat more rapidly in the first phase. A real enigma is the lumber and wood products manufacturing industry. It actually experienced a decline in output in the 1907 to 1913 period, after growing quite vigorously for an old and large industry in the first period. This is a puzzling development that deserves a more detailed examination in its own right, but it says something of the vigorous growth of manufacturing in Canada in the 1897 to 1907 period that one of the largest and longest established manufacturing industries should have been able to grow at as much as 9 percent per year.<sup>15</sup>

Only two substantial manufacturing industries showed accelerating growth between the two periods. Those were leather products and printing and publishing. More people did more reading and required more boots and shoes; more farmers in the prairie region needed more harness. Western agricultural development helped to rejuvenate a declining leather products industry, but over all it had about the lowest rate of growth of any major manufacturing industry. The main story is that most manufacturing industries grew more rapidly in the earliest years of the twentieth century, and the rapid economic development of those years was largely a boom in manufacturing. That is where we are most likely to find the important source of growth in the economy.

To recapitulate the argument to this point, Canada's unusually rapid economic growth in the years between 1897 and 1907 came in advance of the main movement of settlement in the wheat

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<sup>15</sup> Lumber manufacturing actually continued growing at a good pace right up to 1911. Its output then fell sharply in the last couple of years before World War I.

economy of the west. The rapid growth of manufacturing industry and the elaboration of its structure, along with the rapid growth of the economy as a whole, cannot plausibly be explained as a response to or consequence of the Wheat Boom. There was indeed a settlement boom on the Canadian plains, with a great surge of railway and other infrastructure investment, but it came later and was of shorter duration than is usually supposed. More importantly, it was not associated with unusually rapid growth of real per capita income. It did not even raise the growth rate of aggregate output of the economy. Our perception of the Wheat Boom clearly needs to be revised and we need to find a new and better explanation for rapid Canadian growth around the turn of the century.

## II.

It is one thing to call into question the received account of Canadian economic development in the Wheat Boom era but some alternative explanation at least should be offered in substitute. In this section of the paper a preliminary sketch will be given of how we might better account for the rapid growth of the Canadian economy between 1897 and 1907. There are many interesting possibilities and much more intensive research needs to be done before it can be said that a fully satisfactory story has been developed. The main outlines, however, seem fairly clear.

In their critique of the Wheat Boom story Chambers and Gordon (1966) rather glibly suggested that the main explanation of per capita income growth should be sought in technological change in the “gadget sector” of the economy. That is, that an internationally common improvement in manufacturing technology in competitive, traded goods industries, was most likely to have been

the driving force for improvement in the Canadian economy. This was the period, after all, of the Second Industrial Revolution.<sup>16</sup> Traded goods manufacturing, however, was a relatively modest part of the Canadian economy and there may have been other sources of improvement, both technological and organizational. What is needed, after all, is an explanation of why Canada should have grown more rapidly than other economies that were presumably sharing the same technological developments and a reason why the effects should have been concentrated in Canada especially in the decade between 1897 and 1907.<sup>17</sup>

The explanation outlined here has three elements to it. The first might be summed up as saying that the Second Industrial Revolution arrived in Canada. Then there was the coming to fruition of early phases of western settlement, involving wheat in Manitoba and beef for export from Alberta, that had got underway in earlier years but were finally beginning to make their weight felt in the national economy by the late 1890s. Finally, there was the strong development of

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<sup>16</sup> Much has been written about the revolutionary changes in technology that came near the end of the nineteenth century and the impact they had on the development of the major economies of the world. The main constituents of these changes were more scientifically based technological developments that comprised, most notably, the substitution of steel for iron, the greater use of chemical processes, and the application of electricity to economic uses. Little has been written about the impact of the Second Industrial Revolution on Canada.

<sup>17</sup> Other possibly fruitful approaches to analyzing economic growth in this period, such as growth accounting or the estimation of aggregate production functions or the pursuit of insights from the New Growth Theory are presently forestalled by severe limitations of statistical evidence. We are fortunate to have a good historical national income series but we still lack measures of factor inputs. We do not have measures of the capital stock nor even statistics of labor input. Urquhart's development of a good historical national income series was a heroic leap forward but there remains a lot to be done in the quantitative reconstruction of the development of the Canadian economy.

export oriented agricultural processing industries in central Canada that also had earlier roots, and had been some time in the building, but came to full effect by the mid-1890s. Each of these is considered in turn.

The Second Industrial Revolution is a somewhat vague term that covers a range of technological advances that came about in the European world, including North America, in the late years of the nineteenth and early years of the twentieth century. These encompassed the transition from iron to steel, the widespread application of electricity, a variety of chemical processes, and the development and application of the internal combustion engine. Their main unifying characteristic was a much greater systematic scientific basis to the technology than had previously been seen. The timing of these developments ranged over a quite extended period, giving considerable elasticity to the dating of this Second Industrial Revolution. The picture can be clarified by specifying which particular developments in which national economy are under consideration. For Canada steel, electrification, non-ferrous metal smelting, and some chemical processes are of the greatest interest.<sup>18</sup> All had a pronounced impact in the period beginning in the mid-1890s.

The transition from iron to steel had begun with the Bessemer process but that process was not easily transferred from Britain to other economies. The spread of the modern steel industry

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<sup>18</sup> Canada played little role in the development of the internal combustion engine or its uses. The motor vehicle industry eventually became an important element of Canadian manufacturing but that mostly came later, after the 1896-1913 Wheat Boom era.



depended more upon open hearth technology, especially after the basic process was introduced after 1878. Bessemer steel has a very large minimum optimal scale and is quite sensitive to the quality of both fuel and ore. Its product was very largely directed to rails. The open hearth process is more flexible and not so demanding of scale. Nevertheless, it was not a technology that was transferred internationally with ease. In his history of the steel industry of the United States, Misa (1995, p. 79) comments that “The early history of open hearth steelmaking in the U.S. was littered with false starts, melted furnaces and sundry explosions.” The first American open hearth works dated from 1874 and the first basic furnace was started up only in 1886. The great era of expansion of the steel industry in the United States began only in the late 1880s and was temporarily arrested by the depression of the early 1890s.

While it may be true that the Intercolonial Railway in the 1870s and the Canadian Pacific Railway in the 1880s were built with imported rails, open hearth steel was being made both in Montreal and in Trenton, Nova Scotia by 1883 (Donald, 1915). Those were not the integrated iron and steel plants which we tend to associate with the major development of the industry, but plants that refined imported pig iron. The major developments of integrated iron and steel mills came at the very end of the century, in Hamilton, on Cape Breton, and at Sault Ste Marie. In all three cases plans for the construction of steel mills were well underway before the end of the century. That is very early to think of these developments as responses to an enhanced demand for steel because of prairie settlement, yet there continues to be a widespread belief that the dramatic growth of the steel industry in Canada in the early years of the twentieth century was one of the leading secondary effects of prairie settlement. In fact, a closer look at each of the

three main steel developments makes clear than in no case did a growing western market generally, and for rails in particular, play an important role in the founding of the enterprises.

The largest of the steel mills was on Cape Breton. It was conceived as a plant to use advantageously located coal and iron to produce steel for export. Iron ore had recently been discovered at tidewater in Newfoundland and the abundant coal resources of Cape Breton, also at tidewater, had recently been blocked from their established market in the United States. The American owner of the coal mine envisaged an opportunity to build a great, low cost, export-oriented steel mill.<sup>19</sup> Production began in 1901. In the first couple of years of operation a substantial part of the output was exported. This was an open hearth mill. Rails were made from Bessemer steel. That there was no plan at the outset to orient the plant towards the making of rails is indicated by the fact that no rail mill was built when the plant first went up. All indications are that western demand had nothing to do with the decision to establish a steel industry in Cape Breton. The case of the steel plant at Hamilton is even more clear cut. Plans to build the plant had been made in the early 1890s and a blast furnace was in operation by 1895. The open hearth steel plant was added in 1899. These developments came well before any appreciable impact of the wheat economy could have been felt. The steel plant at Hamilton was contemporaneous with other developments in the United States in the great lakes region. The enlargement of the Welland Canal in 1887 allowed bulky inputs to be assembled at Hamilton. This plant never did manufacture rails. Mainly it supplied central Canadian metal fabricating

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<sup>19</sup> Input costs were stated to be substantially below what they were at Pittsburgh. That the quality of the coal resource turned out to be lower than anticipated, and that there was reckless overinvestment at the construction stage are indicative of management problems rather than of inherent unsoundness of the plan.

industries and produced structural steel for urban building. The third major steel establishment, at Sault Ste. Marie, went into production in 1902. It was the outgrowth of a more comprehensive power, paper and chemical development that sought to take advantage of Canadian government subsidies to primary iron production and the discovery of a relatively nearby ore body of some promise.<sup>20</sup> From the outset this plant was intended to produce rails.<sup>21</sup> This was a Bessemer plant (the kind of steel preferred for rails) and the rail mill was the first part of the plant completed. In 1900 the developer, Francis Clergue, had obtained a large contract from the federal government to produce rails for federally subsidized railways.<sup>22</sup> In fact Clergue was unable to meet his contract. Eventually Algoma Steel made lots of rails, but not for western Canada. It made replacement rails for the federally owned Intercolonial Railway and it sold rails to the Michigan Central and to the New York Central. The Canadian Pacific Railway disdainfully refused to buy rails from Algoma.

Canada acquired a modern steel industry, in phase with important steel developments elsewhere, but rail demand emanating from western settlement had little to do with it. Other considerations were paramount in the decisions to build integrated iron and steel mills in Canada and to bring them into production in the period between 1895 and 1905. It has already been seen in Section I that rapid growth of the steel and steel products industry played a dominant in the

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<sup>20</sup> The fact that the Helen mine turned out to have unsuitable ore does not negate the fact that, as with the case of Belle Isle iron and Sydney steel, the discovery of iron ores played an important role in the timing of the development.

<sup>21</sup> Donald (1915, p 209) claims that the original idea was to make ferro-nickel for the armament industry, using ore from the Sudbury basin, and that a contract had been signed with Krupp.

<sup>22</sup> McDowall (1984, p 36)

growth of manufacturing in Canada in the earliest years of the twentieth century. The primary sector of the industry was where the most rapid growth occurred; Canada already had a substantial steel fabricating industry by 1890. The development of steel in Canada coincided fairly closely with developments in other countries such as Germany and the United States. The new technology of steel may have had a greater relative impact in Canada, however, because of the narrower base of manufacturing industry in this country.<sup>23</sup>

Another prominent element of the Second Industrial Revolution was the application of electricity. It came to be used for lighting, to power motors and machinery, and in electrochemical or electrolytic processes. In a relatively short time electricity became a ubiquitous feature of the economy. Electric lighting was rapidly adopted in many places around the world in the early 1880s. The greater use of electricity for power and manufacturing processes was later in coming. It depended upon innovations in electrolytic processing, the construction of large, central generating stations and long distance transmission of power, and upon the invention of the AC polyphase induction motor. Prior to 1890 only a few pioneering installations were made. Thereafter, electrification spread rapidly. Canadians made few important contributions to the development of the technology but appear to have been relatively quick in making use of it.<sup>24</sup> The electric street railway had first been successfully implemented

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<sup>23</sup> Even in the area of iron and steel itself, Canada did not have a substantial old technology iron industry already in place. To a large extent this country was building from the ground up.

<sup>24</sup> The most notable technical contributions appear to have been made by emigre Canadians working in the United States, especially in the field of electrochemical processing. Thomas Willson's experimentation with aluminum reduction led to the development of calcium carbide and to the invention of acetylene. Lawrence Becket developed a number of electrometallurgical processes. These two laid much of the technological foundation for what was to become the Union Carbide Corporation.

By 1885 the cotton textile mill at the foot of Montmorency Falls was producing and using its own

at Richmond, Virginia in 1887. Several Canadian cities quickly followed suit.<sup>25</sup> The great development at Niagara Falls, New York started up in 1895 and it was symbolic of the opening of the electrical age.<sup>26</sup> In 1896 an integrated industrial centre based on a hydroelectrical development was begun at Sault Ste. Marie and in 1898 Shawinigan Falls was developed as a major electrical site.

Unfortunately, the quantitative dimensions of early electrification in Canada have not been fully documented. It is a topic we need to know more about. The main piece of evidence that we have is a widely reproduced series of installed hydroelectric generating capacity.<sup>27</sup> Steam generating plants were fairly common in the early years of electrical development so this series may have some bias against the earliest expansion of electrical production. A report by Leo Denis for the Canadian Commission of Conservation (1918) provides great detail on the installed capacity and date of installation of every generating station or plant component in the country from which a more comprehensive retrospective series can be constructed. So far that has been done only for the 72 largest installations representing, as a guess, just under 90 percent of total capacity in 1911. This series is shown here in Figure 7 along with the series for

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electricity. Early manufacturing powered by electrical motors was prominently in the printing industry. In 1884 the newspaper in Lawrence, Massachusetts was running its presses with an electric motor. Two years later the Boston Globe was also and in 1887 the newspaper in St. Catharines, Ontario electrified. Heavier industrial uses are first noted in that same year: a flour mill in Laramie, Wyoming and, the following year, a mine hoist in Aspen, Colorado. In 1888 the Barber Paper Company of Georgetown, Ontario became one of the very first industrial plants in North America to power with electricity. It also pioneered long distance transmission.

<sup>25</sup> Ottawa and Winnipeg started electrified lines in 1891, Montreal and Halifax the following year.

<sup>26</sup> Two years prior to that a planned industrial town based on a large hydroelectric dam had been established at Folsom, California.

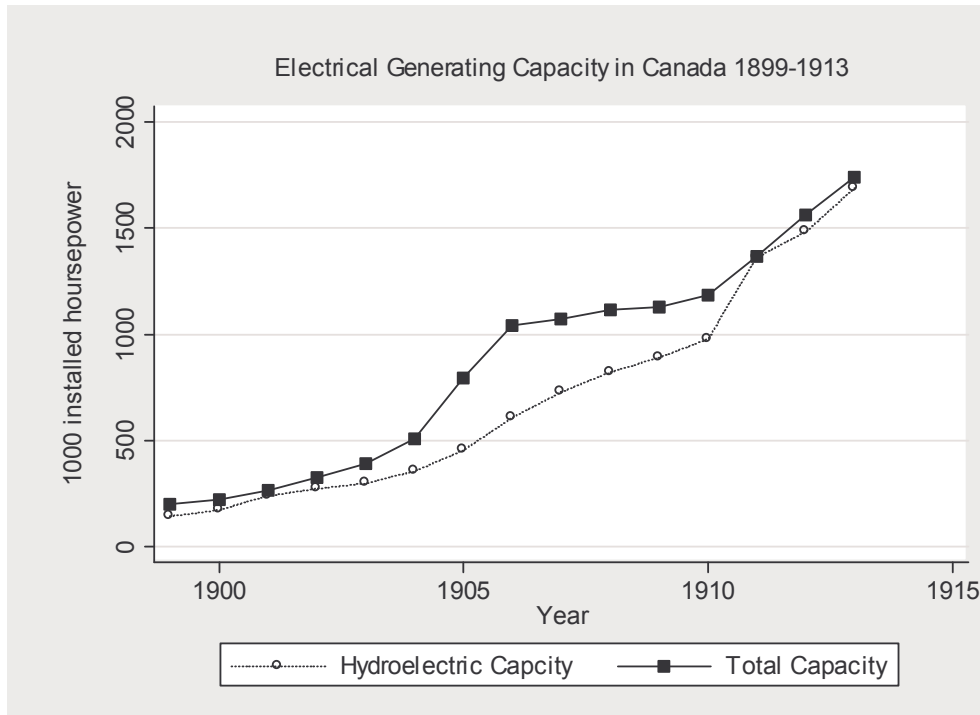
<sup>27</sup> This appears as series P-75 in **Historical Statistics of Canada** (196?)

hydroelectric installations only. The period of most rapid growth of generating capacity was in the first five years of the century. This accords with the argument that the 1897 to 1907 period reflected especially the implementation of the technology of the Second Industrial Revolution. It does not, however, provide direct support to the notion that electrification was a major driving force of economic development in the period. On the basis of the scanty evidence we have at hand, it would be hard to make the case that Canada gained more from early electrification than other economies of the time, and particularly than the United States. Canada may well have been fortunately endowed with abundant, large hydroelectric generating sites but these did not necessarily give this country an edge at the outset. We like to think of Niagara Falls and Shawinigan as dramatic, large scale hydroelectric sites, but the United States was the first to harness Niagara and that country had many other important sites that it exploited in the early years of electrical development. In the years up to 1913 it is quite probable that Canada lagged somewhat behind the United States in the pace of electrification.

Canada was a more agricultural economy than the United States, and the farm economy was where electrification most notably lagged. The Maritime region of Canada also appears generally to have been behind in electrification. In addition, the industries which led in the use of electrical power, such as printing and textiles, were not of great prominence in Canada, whereas large Canadian industries (lumber, paper, and food manufacturing) were ones which generally were slow to electrify. Counterbalancing that, however, was a relatively large weight of electrochemical processing industries (aluminum, calcium carbide) in this country. Furthermore, industries which were not notably intensive in the use of electricity may have been

more inclined

**Figure 7:**



in Canada to adopt the electrical technology.<sup>28</sup> More research is needed to clarify and to quantify the role played by electrification in this period of Canadian development. About the most that can be said for now is that the hey-day of early electrification adds another reason why the Canadian economy moved above its earlier growth trend after 1897 even if it does not give much

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<sup>28</sup> In the United States the paper industry was generally a laggard in the use of electrical power but in Canada there was a surge of pulp and paper manufacturing developments around the turn of the century that deliberately focused on the potential hydroelectric power in relatively remote locations. Wylie (1986, ) has provided support for the argument that Canadian manufacturing adapted to a more electricity intensive technology, although his argument applies mostly to a somewhat later period.

basis for explaining why Canadian development would have been more rapid than that of the United States.

A third area of development that bears a relationship to the new technology of the Second Industrial Revolution is non-ferrous metal mining and smelting. There is a tendency in the writing of Canadian economic history within the staples framework to think of mineral developments as largely coming after the period of the Wheat Boom. The idea is that the wheat staple was succeeded by another round of staple-based development centering on the forest and mineral wealth of the Pre-Cambrian Shield and of British Columbia. In fact, many of the most important developments came precisely in the 1897 to 1907 decade that is the focus of this paper. These developments were not simply fortuitous stumblings upon rich mineral finds. They were the result of a deliberate investment in geological exploration and mapping, on the one hand, and technological developments on the other. The new electrical technology added greatly to the demand for copper, lead, and aluminum.<sup>29</sup> At the same time, electrochemical refining processes were being developed that permitted use of the typically complex ores found in Canada. The chronology of Canadian mining developments points to the 1897 to 1907 decade as one of unusually fruitful development. The complex ores of the interior of British Columbia were identified and began to be exploited in the mid 1890s. The smelter at Trail went into operation in 1897 and in 1902 it became the world's pioneer producer of electrolytically refined lead. The first flotation plant at Rossland was opened in 1904. In 1901 copper production got

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<sup>29</sup> The conductive qualities of aluminum were clearly appreciated and that metal was being used in quite large quantities in high voltage electrical transmission cables at a surprisingly early date.



underway at the Britannia mine on the B.C. coast. At around the same time there were major developments in the Sudbury Basin.<sup>30</sup> The Froid mine opened in 1899 and the Creighton mine in 1901. Further north in the Pre-Cambrian Shield the succession of gold and silver discoveries was beginning, with some of the most important developments getting underway in precisely this period.<sup>31</sup> The decade surrounding the turn of the century can clearly be identified as the period of the founding of the modern Canadian mining and smelting industry. This was brought out in the rapid growth over the 1897 to 1907 decade of the mining sector as shown in Table 1 and in the particularly rapid growth of the nonferrous metal manufacturing industry as shown in Table 2. The mining and smelting development was not a large element in the overall growth of the economy but it was one more boost that occurred in an otherwise upsurging economy.<sup>32</sup> We

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<sup>30</sup> Nickel ore had been identified near Sudbury as early as 1853 and copper was exposed during the construction of the CPR in the early 1880s. The main problem then was what to do with those finds. It was the burgeoning demand for copper toward the end of the century and the role of nickel in the armaments race that shifted the economic climate.

<sup>31</sup> Among the most prominent discoveries at this time: Cobalt in 1903, Larder Lake in 1906, and Porcupine in 1908. One should also not overlook the development of asbestos in Quebec. It had been first discovered in 1860 and mining had begun at Thetford in 1874 but major development began when the Johns-Manville company got into the act in 1901 and began to produce pipe insulation.

<sup>32</sup> I am inclined to relegate merely to a footnote the coincidental fact that the Klondike gold rush occurred in precisely this same period. The Bonanza Creek discovery in the summer of 1896 initiated one of the most dramatic episodes of Canadian history. Other than possible psychological boosts to the Canadian economic outlook, it cannot have had much impact on the economy, neither monetarily nor otherwise. National gold output is recorded as tripling to \$6 million in 1897 and doubling again the following year. This was a very modest addition to national output and most of the miners simply packed out their nuggets and dust and went back to Seattle. It is not even clear that this gold had any impact on the Canadian money supply.

are reminded that it is rare to find any single factor that makes a really large contribution to the growth of national income. Rapid development is usually a composite of many relatively modest components. In the present case mining and smelting development was a relatively new feature of the Canadian economic scene and certainly made its small but significant contribution.

Let me turn from the Second Industrial Revolution theme to a second reason for the upturn in the growth of output in Canada after 1897. This is the maturing of the agricultural economy of Manitoba. It is all too common in writing on Canadian economic history to treat prairie settlement as a single piece, forgetting that the settlement of Manitoba came a generation earlier than that of the western plains. The establishment of rail transport connections to the outside world in 1879 had brought a first rush of settlement to Manitoba. With a collapse of wheat prices on world markets and, at about the same time, a realization that Manitoba posed serious climatic challenges to wheat farming, an abrupt end came to that first settlement boom. Nevertheless, enough farmers stayed, and the community grew and was augmented by a small continuing inflow, so that by about 1891 a significant new addition had been made to Canada's agricultural economy. Wheat production had reached a level sufficient to reestablish Canada as a net exporter of wheat, which it had not consistently been for about 25 years. By the mid-1890s Manitoba was contributing more than one half of Canada's wheat production and by 1898 wheat had again emerged as the single leading export of the country. It was seen in Figure 4 that up to 1905 it was Manitoba that dominated the wheat economy of the west. By the mid-1890s the investment in settlement and farm development there had begun to pay off in a big way. An important reason why Canadian output was growing so rapidly over the 1897 to 1907 decade was that a well-developed Manitoba farm economy was making a significant contribution. Yes,

there was still some extensive settlement going on, but mainly in the Swan River district in the northwest and in the very westernmost tier of townships. For the most part, however, what was coming out of Manitoba was the wheat production of a well established economy that had passed through its initial settlement phase many years before.

An otherwise overlooked source of growth of output in the Canadian economy has been the production of this maturing Manitoba economy. Too often it has been subsumed into the development of the prairies generally and the on-going process of settlement in the Wheat Boom era. In reality, Manitoba was already largely settled, the investment had been made, and by 1897 it was contributing substantially to the growth of the national economy. We do not have a breakdown of national output by region so it is not possible, at this stage of research, to be quantitatively precise about the actual contribution made by Manitoba to national growth in the period before 1907. In 1898 Manitoba produced 25 million bushels of wheat. That was just equivalent to the amount of wheat and flour exported from Canada in that year. By 1901 Manitoba's production had reached 50 million bushels. At that time Manitoba's output comprised 80 percent of all western Canadian wheat production. The Wheat Boom should be thought of as having two clear phases. The first is associated largely with Manitoba reaching production levels that allowed Canada to reestablish itself as an exporter of wheat. That was a production development founded on a settlement process of earlier years. The second phase, after 1905 or 1906 involved the settlement of the plains region west of Manitoba and had the implications that are usually associated with the Wheat Boom.

A third reason why Canadian output grew with unusual rapidity in the 1897 to 1907 period, before the real Wheat Boom, is the success of agricultural processing industries in central Canada. The foremost of these were the cheese and the pork packing industries. Both had a strong export orientation, to the British market, and both were built upon vigorous agricultural development. This is an aspect of late nineteenth century Canadian development that has been almost entirely overlooked. That Ontario, especially, developed a strong and prosperous dairying sector has been widely enough recognized but the attention has usually been directed to an earlier period.

The factory cheese industry had its beginnings in Ontario in the late 1860s and made good inroads into the British market in the following decade. This was an interesting case of an industry that grew entirely on the basis of exports, but it would be wrong to think of it as export led. In the early days of the industry there was a perfectly elastic demand in Britain, once a product of satisfactory quality could be turned out. There was no substantial demand for cheese in Canada and this was not an industry based on long standing rural tradition. The key was the factory organization, borrowed from upstate New York, which economized on scarce cheesemaking skill. The industry grew as Canadian farmers built up herds and organized a system based on small local factories. By 1873 cheese comprised almost three percent of gross farm output and two-thirds of it was exported. What is most interesting for the purposes of this paper is the time pattern of growth in cheese exports. Exports increased in several surges. One of those came in the early 1880s, when the value of cheese exports doubled in a few years. The

really dramatic change, however, came in the 1890s. By that time the factory cheese industry was relatively mature. Certainly its formative years were past, but the large growth was yet to come. There was another steep climb of exports in the early 1890s, then the trade levelled off until 1896, whence exports again climbed steeply. In 1897, by value, cheese was Canada's single leading export commodity. By this time, though, it constituted a larger component of total agricultural output so it carried considerable weight. Exports reached a peak in 1906, by which time they had doubled since 1896. Cheese was a strong performer precisely in a period when Canadian exports were increasing vigorously but before western wheat came to have its main impact.<sup>33</sup>

There is an additional, intriguing aspect of the time pattern of cheese exports. The peak year by value was 1906, by volume 1903. Thereafter, cheese exports declined absolutely, and quite precipitously at that. By 1913 cheese exports were down to only two-thirds of their 1906 value. See Figure 8. This demise of a once great Canadian export industry has never been adequately explained. Other writers have noted that Canadian cheese was displaced in the British market at this time by cheese from New Zealand. The explanation cannot, however, lie on the side of overseas demand. The price of cheese in the British market was rising, not falling. One is tempted to think that this might simply be a case where agricultural resources, particularly labor, were shifted to other uses — western wheat especially. That would be a tidy story and one that

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<sup>33</sup> Earlier writers, such as Buckley for example, had noted the growth of exports in advance of western settlement but had not probed the main sources of that growth. In a recent paper Green and Sparks (1999) find a strong stimulus to income growth from exports, especially in the period 1895 to 1905. Identifying the sources of that export growth here should help dispel any vague implication they leave that it may have had something to do with wheat and western settlement.

would suggest that part of gains attributable to western wheat were merely substitution for eastern cheese. Indeed, that is precisely the story set out by Chambers and Gordon (1966) who identified the eastern resource based sector of their expanded model as the “cheese” sector. Unfortunately, the story is in fact not quite that simple. A full and careful investigation has not yet been completed but the main outlines appear to be as follows. Ontario farmers began to abandon cheese because it became less profitable than other forms of dairying, especially supplying fluid milk to urban centers. Even butter making, which came increasingly after 1890 to be carried out in factories (creameries), became a more and more rewarding use of milk. Urban demand, along with new technology (small scale cream separators, pasteurization and sanitary bottling of milk) had a lot to do with this. It can also be said that farm labor from the cheese dairying districts was more likely to be moving to urban employment in central Canada than to wheat farming in the west.<sup>34</sup>

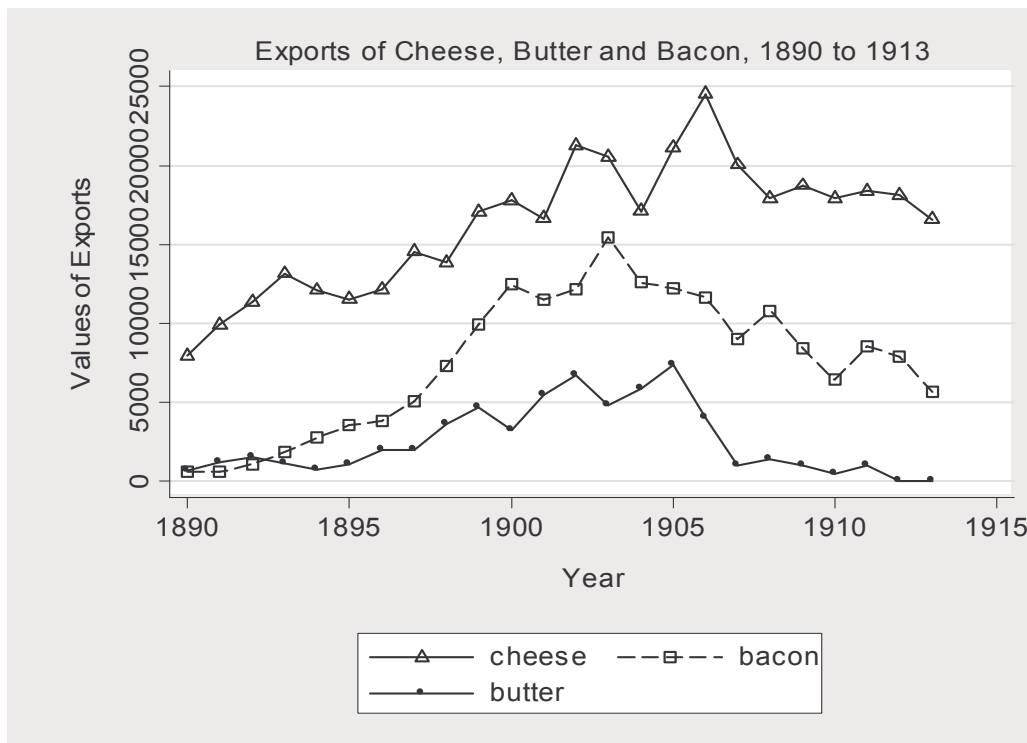
The role of cheese production for export was augmented by the development of the other branch of dairying, butter production. The latter product had always been a more important component of farm output than milk for cheese. Prior to 1890 virtually all butter was made in farm households. Canada’s experience as an exporter of butter was much more widely variable. Export butter had to be of high quality in order to keep for a relatively long period. Cheese, of course, went through an aging process in any event, and part of that could be done in transit. Quality problems had been overcome to some extent and around the time of Confederation

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<sup>34</sup> Population depletion in the dairying counties of Ontario was less at this time than in the grain producing regions of Bruce, Grey and Huron counties from which the largest group of western settlers originated (McInnis, 1990). The main depopulation of the dairy counties had occurred at an earlier time.

Canada was exporting a significant fraction of its butter production. Those exports fell off, however, and by 1890 almost no butter was exported. With the introduction of the butter factory in the 1890s exports of butter again began to increase. The big increases came specifically

**Figure Figure 8:**



between 1897 and 1905. By the latter date the value of butter exports amounted to as much as 35 percent of the value of cheese exports. This was a significant reinforcement of the impact on the national economy of the eastern dairy sector. Only about 20 percent of Canadian butter production was exported in the 1905 peak year. The big growth of butter output was primarily oriented towards the domestic market, but it was nevertheless a substantial growth. Between 1897 and 1907 butter production increased at an average annual rate of 6 percent. That is healthy growth in a relatively large sector of the economy and it came mainly in the decade when

income was growing with unusual rapidity.<sup>35</sup> In contrast to the case of cheese, which was wholly an export industry, butter production continued to grow even if exports did not. Again, however, exports of butter plummeted after the peak in 1905 and by 1912 Canada had become a net importer of butter.<sup>36</sup>

There was yet another agriculturally based processing industry that contributed importantly to Canadian development precisely in the 1897 to 1907 period. This was pork packing. Prior to the late years of the nineteenth century the processing of meat, slaughtering and butchering, was an adjunct of the farm sector, carried out on the farm or in connection with retail establishments. By the twentieth century meat processing had become a factory industry and in later years of the century it was, by value, one of the largest output sectors of manufacturing. In Canada, prior to 1900, only pork packing had moved into the factory in any significant way. It was heavily focused on a single firm, the Davies company of Toronto, that would later become Canada Packers. This was an enterprise that from the outset had an export orientation. It had a clear conception of the product, cured bacon in the form of the Wiltshire side, that would sell in Britain. The problem was to be able to produce that commodity in Canada.<sup>37</sup> Prior to 1890 there

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<sup>35</sup> The growth of butter production actually began in 1890, after a couple of decades of stagnation. Unlike the situation with cheese, butter output continued to grow right up to 1910. Over the whole period 1890 to 1910 the average rate of growth was 5 percent per annum. The most rapid growth was concentrated in the years between 1897 and 1905.

<sup>36</sup> The remarkable inelasticity of dairy supply in central Canada remains something of an enigma in the turn of the century development story. It is a reminder that growth in some sectors of the economy is often at the expense of production elsewhere. Gross expansions, whether in western wheat or in steel or non-ferrous metal production have ultimately to be assessed in terms of their net contribution to the economy.

<sup>37</sup> An early difficulty was to get a local supply of hogs. Almost all Canadian farms raised a few hogs. These animals were highly efficient converters of otherwise waste products of the farm into usable output. Specialized hog production, on the other hand, was not profitable in nineteenth century Canada. One of the under-recognized facts of Canadian economic history is that a profound difference between Canada and adjacent areas of the United States lay



was little production and only small scale exports. After that date Canadian bacon exports took off. By 1897 the value of cured pork exports was approaching 40 percent of that of cheese exports, and it increased greatly after that date. Two things had happened. One is that the raising of swine had become integrated into the expanding cheese industry. Pigs were fed on the whey by-product of the cheese factories. Secondly, the United States had raised its tariff on Canadian malting barley and essentially brought to an end a well developed export trade in that product. Barley makes excellent pig feed and Canadian hog producers now had an abundant supply of cheap feed for swine. Together, these developments laid the foundation for a large increase in hog production and a rapid increase in exports of cured pork. Between 1897 and 1906 cured pork exports increased at the average annual rate of almost 10 percent per annum.<sup>38</sup> This was one of the star performing industries of that period. The timing fits in closely with that of cheese and butter exports. This was central Canadian agriculture coming into its own, providing the inputs for important and rapidly growing factory food processing industries. It is a feature of the Canadian economy in this period that has been far too much neglected.

Cured pork exports share another feature with dairy products. They reach a peak early in the twentieth century and thereafter decline absolutely. Another promising Canadian export industry

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in the fact that Indian corn (maize) could not reliably be ripened in Canada, except in a limited area of southwestern Ontario. Without a feed grain as cheap as corn, Canadian farmers could not produce pork as cheaply as their neighbors in the United States. This fact alone explains much of the income differential between rural Canada and the rural United States over most of the nineteenth century. At the outset the Davies firm in Toronto imported hogs from the United States to process and cure for export to the British market. It had to work for several years to build up local supplies.

<sup>38</sup> Actually the peak in cured pork exports was reached in 1903. They were growing rapidly before 1897. Over the decade 1893 to 1903 pork exports increased by a factor of 8 1/2. That is an annual growth rate of just about 24 percent.

founded at about the time that western settlement began to take on significant dimensions and have a real impact on the national economy. Even less is known about the decline of the export pork industry. Much of it was a diversion to rapidly growing domestic demand. The problem was certainly not on the side of export demand. Bacon prices in Britain were rising even faster than cheese prices. The answer must be sought in the Canadian economy. The profitability of hog production in central Canada was undermined by the decline of the cheese industry, and hence of the supply of whey for feed, and also by the shift of the barley farmers of eastern Ontario into other lines of production, thus depriving hog farmers of cheap feed. Pork production, mainly for domestic purposes, continued to increase in Canada, but more and more of it was coming from western Canada.

What has been depicted here has been the rise and fall, as it were, of important agriculturally based industries with strong export orientation. Their rise coincided precisely with the rapid growth period of 1897 to 1907. Their decline came in the subsequent period when western settlement was the focus of attraction and quite arguably the driving force of the economy. This, albeit passing, phase of export growth in cheese, butter, and pork -- products essentially of central Canadian agriculture -- clearly had a lot to do with the rapid increase in aggregate output of the Canadian economy. It goes some distance towards explaining why, in a period of accelerated growth owing to the technological advances of the Second Industrial Revolution, Canada should have grown even more rapidly than other economies that were going through the same experience. At the same time the decline of these lines of activity after 1906 or 1907 goes some way to explaining why per capita income growth was not out of the ordinary in the true

Wheat Boom period of 1907 to 1913.

### III.

Recapitulating the argument of this paper, it is that the most remarkable growth of the Canadian economy came in the years 1897 to 1907. In that period Canada experienced rates of economic advance that were outstanding in its whole history. The received interpretation of Canadian development has linked that rapid growth to the settlement of the plains, to the Wheat Boom. The recently available annual series of Canadian national income makes clear that such an explanation is not sustainable. The most rapid growth of the economy came before the settlement of the west got fully underway and could have had sufficient impact. There was indeed a Wheat Boom that involved massive immigration, rapid settlement of land in Saskatchewan and Alberta, a great investment boom, the creation of a whole structure of urban places, and a great extension of the national railway network. It came primarily between 1907 and 1913, a shorter period than usually emphasized, and was not associated with especially rapid increase of real per capita income.

The explanation put forward in this paper for the rapid growth in the decade following 1897 is quite different from the received account of Canadian economic history. It emphasizes an upturn in the rate of growth shared by much of the rest of the world that was based upon the implementation of the new, more scientifically based technology of the Second Industrial Revolution. In the Canadian case that was augmented by two additional sources of growth. One is the coming to fruition of an earlier settlement process in Manitoba and the addition to the

Canadian economy of a successful wheat exporting sector. The other is the gains made from agriculturally based developments in central Canada. The forceful emergence of export industries that cured pork and made cheese and butter for the British market coincided in timing with a more general industrialization that was based on the new technologies of steel and electricity.